

WHAT IS CLAIMED IS:

1. A method for driving an organic electroluminescent display device, which has a set of row electrodes and a set of column electrodes provided in a matrix pattern,  
5 and an organic electroluminescent element sandwiched between both sets; comprising:

driving the organic electroluminescent element by a capacitive charge driving method when an ambient temperature is not higher than a prescribed temperature,  
10 the capacitive charge driving method comprising supplying a constant current to a column electrode after performing capacitance charge and then applying a constant voltage to the column electrode to turn off a pixel; and

driving the organic electroluminescent element by an  
15 electric charge control driving method when the ambient temperature is higher than the prescribed temperature, the electric charge control driving method comprising supplying electric charges to the column electrode and then placing an output from a driving circuit to the  
20 column electrode in a high impedance state.

2. The method according to Claim 1, wherein a maximum voltage of a supply voltage of the driving circuit under the electric charge control driving method is not higher than that under the capacitive charge driving method.

25 3. The method according to Claim 1, wherein the prescribed temperature is in a temperature range of from --10°C to +10°C.

4. The method according to Claim 1, wherein a grayshade satisfies Formulas 1 to 3 listed below, electric charges on a first term of a right side of Formula 1 are supplied by capacitive charge, and electric charges of a second  
5 term of the right side are supplied by application of a constant current:

$$Q_1 = C_{colm} \cdot V_1 + I_1 \cdot T_{SEL1} \quad \text{Formula 1}$$

$$Q_2 = I_2 \cdot T_{SEL2} \quad \text{Formula 2}$$

$$I_2 \cdot T_{SEL2} - C_{colm} \cdot V_2 = I_1 \cdot T_{SEL1} \quad \text{Formula 3}$$

10 wherein a capacitance of one column of the organic electroluminescent element is  $C_{colm}$ ; when the electroluminescent element is driven by the capacitive charge driving method, an amount of electric charges supplied to the column electrode from the driving circuit,  
15 a driving voltage in a constant current section for supplying the constant current to the column electrode, a driving current in the constant current section, and a length of the constant current section are  $Q_1$ ,  $V_1$ ,  $I_1$  and  $T_{SEL1}$ , respectively; and when the electroluminescent  
20 element is driven by the electric charge control driving method, the amount of electric charges supplied to the column electrode from the driving circuit, a voltage between a row electrode and the column electrode on completion of the high impedance state, the driving  
25 current in the constant current section for supplying the electric charges to the column electrode, and a length of the constant current section are  $Q_2$ ,  $V_2$ ,  $I_2$  and  $T_{SEL2}$ ,

respectively.

5. A method for driving an organic electroluminescent display device, which has a set of row electrodes and a set of column electrodes provided in a matrix pattern, and an organic electroluminescent element sandwiched between both sets; comprising:

driving the organic electroluminescent element by a capacitive charge driving method when a light-emission luminance in a maximum gray scale is a relatively high luminance, the capacitive charge driving method comprising supplying a constant current to a column electrode after performing the capacitance charge, and then applying a constant voltage to the column electrode to turn off a pixel; and

driving the organic electroluminescent element by an electric charge control driving method when the light-emission luminance in the maximum gray scale is a relatively low luminance, the electric charge control driving method comprising supplying electric charges to the column electrode and then placing an output from a driving circuit to the column electrode in a high impedance state.

6. The method according to Claim 5, wherein when a rated luminance is defined as 100%, a light-emission luminance when switching between both driving methods has a value of 40% to 60% of the rated luminance.

7. The method according to Claim 5, wherein the current

applied to the organic electroluminescent element at the low luminance is not greater than that applied at a rated light-emission.

8. The method according to Claim 5, wherein a grayshade  
5 satisfies Formulas 4 to 6 listed below, electric charges on a first term of a right side of Formula 4 are supplied by capacitive charge, and electric charges of a second term of the right side are supplied by application of the constant current:

10  $Q_1 = C_{colm} \cdot V_1 + I_1 \cdot T_{SEL1}$  Formula 4

$Q_2 = I_2 \cdot T_{SEL2}$  Formula 5

$R_{DIM} = (I_2 \cdot T_{SEL2} - C_{colm} \cdot V_2) / (I_1 \cdot T_{SEL1})$  Formula 6

wherein a capacitance of one column of the organic electroluminescent element is  $C_{colm}$ ; when the  
15 electroluminescent element is driven by the capacitive charge driving method, an amount of electric charges supplied to the column electrode from the driving circuit, a driving voltage in a constant current section for supplying the constant current to the column electrode, a  
20 driving current in the constant current section, and a length of the constant current section are  $Q_1$ ,  $V_1$ ,  $I_1$  and  $T_{SEL1}$ , respectively; and when the electroluminescent element is driven by the electric charge control driving method, the amount of electric charges supplied to the  
25 column electrode from the driving circuit, a voltage between a row electrode and the column electrode on completion of the high impedance state, the driving

current in the constant current section for supplying the electric charges to the column electrode, and the length of the constant current section are  $Q_2$ ,  $V_2$ ,  $I_2$  and  $T_{SEL2}$ , respectively; and

5        wherein (a luminance when being driven by the electric charge control method)/ (a luminance when being driven by the capacitive charge driving method) in the grayshade is  $R_{DIM}$ .

9. A method for driving an organic electroluminescent display device, which has a set of row electrodes and a set of column electrodes provided in a matrix pattern, and an organic electroluminescent element sandwiched between both sets; comprising:

15        driving the organic electroluminescent element by an electric charge control driving method when an ambient temperature is higher than a prescribed temperature, the electric charge control driving method comprising supplying electric charges to a column electrode and then placing an output from a driving circuit to the column electrode in a high impedance state;

25        driving the organic electroluminescent element by the electric charge control driving method when the ambient temperature is not higher than the prescribed temperature and when a light-emission luminance in a maximum gray scale is a relatively low luminance; and

      driving the organic electroluminescent element by a capacitive charge driving method when the ambient

temperature is not higher than the prescribed temperature and when the light-emission luminance in the maximum gray scale is a relatively high luminance, the capacitive charge driving method comprising supplying a constant  
5 current to the column electrode after performing the capacitance charge, and then applying a constant voltage to the column electrode to turn off a pixel.

10. The method according to Claim 9, wherein when the ambient temperature is not higher than the prescribed  
10 temperature and when a rated luminance is defined as 100%, a light-emission luminance when switching between both driving methods has a value of 40% to 60% of the rated luminance.

11. The method according to Claim 9, wherein the  
15 prescribed temperature is in a temperature range of from -10°C to +10°C.

12. The method according to Claim 1, wherein a maximum voltage of a supply voltage of the driving circuit is not higher than 25 V.

20 13. The method according to Claim 5, wherein a maximum voltage of a supply voltage of the driving circuit is not higher than 25 V.

14. The method according to Claim 9, wherein a maximum voltage of a supply voltage of the driving circuit is not  
25 higher than 25 V.